

MCS-CONDUCTIVITY Description & Specifications



Part # MCS-CONDUCTIVITY

Description

The MCS-CONDUCTIVITY is a conductivity-to-voltage transducer which takes its input from a carbon electrode probe in a fluid stream and outputs a corresponding voltage to a MCS Micro Controller. The MCS software accurately translates this voltage to read out the fluid conductivity in standard units of mS/cm. This value is compared with setpoint information to control bleed and feed functions.

The probe is mounted in a custom PVC pipe tee whose geometry is designed to produce a cell constant of 1.5 cm-1. It is important to ensure that the electrode excitation is pure AC in

Specifications

Conductivity Range	.0 to 5000mS/cm
Supply Voltage	.5.00vdc ±0.25v
Output Voltage	.0 to 4.50vdc
Conductivity Accuracy	.0 to 100mS/cm ±10mS/cm
	100 to 500mS/cm ±15mS/cm
	500 to 1000mS/cm ±25mS/cm
	1000 to 2000mS/cm ±50mS/cm
	2000 to 3000mS/cm ±75mS/cm
	3000 to 4000mS/cm ±150mS/cm
	4000 to 5000mS/cm ±250mS/cm
Resolution	1% over range 100 to 5000mS/cm
Calibration	None required
Probe	Cell constant = 1.5 cm-1
Temperature Compensation	Thermistor integral with probe
Fluid Temperature Range	.+32°F to +140°F (0°C to +60°C)
Operating Range	-4°F to +158°F (-20°C to +70°C)

order to prevent electrolytic formation of gas bubbles which reduce the effective area of the electrodes. The MCS-CONDUCTIVITY uses a proprietary "D-Loop" circuit which effectively eliminates the DC component of the excitation. The excitation AC voltage is derived from the +5 volts supplied by the MCS controller. The output of the MCS-CONDUCTIVITY is directly proportional to this voltage, making the output ratiometric.

Since the conductivity is a strong function of the fluid temperature, a thermistor integrated with the conductivity probe provides the MCS controller with correcting temperature information.

Volts to S/cm Chart

$V_0 = Vr^*[V_1 / (547.45 + 2)]$	V_{1}] · TF = [1 + 0.0111*(T-77)] · V_{2}	$\sqrt{77} - \frac{1}{2} \sqrt{17} + \frac{1}{2} \sqrt{17} = 5.0 \text{ v} \cdot \text{T} = 99^{\circ} \text{F} \cdot \text{T} \text{F} = 1.244$
$v_0 = v_1 [\gamma_t, (0+1.+0)]$	$[t_{ij}], t_{ij} = [t_{ij}, 0.0111, (t_{ij}, t_{ij})], t_{ij}$	$77 = 10^{-11}$, 700^{-12} , 710^{-12}

 γ_t is conductivity at a fluid temp of 99°F; γ_{77} is conductivity at a the reference temp of 77°F; Vo is output voltage

Vo volts	γ _t μS/cm	γ ₇₇ μS/cm												
0.772	100	80.4	3.338	1100	884.1	3.966	2100	1687.8	4.250	3100	2491.6	4.411	4100	3295.3
1.338	200	160.7	3.434	1200	964.5	4.004	2200	1768.2	4.270	3200	2571.9	4.423	4200	3375.7
1.770	300	241.1	3.518	1300	1044.8	4.039	2300	1848.6	4.289	3300	2652.3	4.435	4300	3456.0
2.111	400	321.5	3.594	1400	1125.2	4.071	2400	1929.0	4.307	3400	2732.7	4.447	4400	3536.4
2.387	500	401.9	3.663	1500	1205.6	4.102	2500	2009.3	4.324	3500	2813.1	4.458	4500	3616.8
2.614	600	482.2	3.725	1600	1286.0	4.130	2600	2089.7	4.340	3600	2893.4	4.468	4600	3697.2
2.806	700	562.6	3.782	1700	1366.3	4.157	2700	2170.1	4.356	3700	2973.8	4.478	4700	3777.5
2.969	800	643.0	3.834	1800	1446.7	4.182	2800	2250.4	4.370	3800	3054.2	4.488	4800	3857.9
3.109	900	723.4	3.882	1900	1527.1	4.206	2900	2330.8	4.385	3900	3134.5	4.498	4900	3938.3
3.231	1000	803.7	3.925	2000	1607.5	4.228	3000	2411.2	4.398	4000	3214.9	4.507	5000	4018.6

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